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- 1	FORM PTO-1449 (Rev. 2-32)	U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT	ATTY. DOCKET NO. 175912	SERIALONO SERIAL
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			FILING DATE October 27, 1999	GROUP Unassigned /645

U.S. PATENT DOCUMENTS

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EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
LL	AA	5,266,478	11/30/93	Abstract			
LL	AB	5,445,960	08/29/95	Abstract			
L.(AC	5,558,865	09/24/64	Abstract			
LL	AD	5,618,922	04/08/97	Abstract			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
LC	AE	459779	12/04/91	Europe			Abs. Only	
1	AF	465979	01/15/92	Europe			Abs. Only	
	AG	503916	09/16/92	Europe			Abs. Only	
	АН	516135	05/05/93	Europe			Abs. Only	
	AI	581353	02/02/94	Europe			Abs. Only	
	AJ	6,141,885	05/24/94	Japan			Abs. Only	
	AK	WO 90/12868	11/01/90	WIPO			Abs. Only	
	AL	WO 91/09625	07/11/91	WIPO			Abs. Only	
	AM	WO 91/11198	08/08/91	WIPO			Abs. Only	
	AN	WO 91/17764	11/28/91	WIPO			Abs. Only	
	AO	WO 92/07878	05/14/92	WIPO			Abs. Only	
1	AP	WO 92/08491	05/29/92	WIPO			Abs.	

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LL	AQ	WO 92/08983	5/29/92	PCT	
)	AR	WO 92/15885	09/17/92	PCT	·
	AS	WO 93/04090	03/04/93	WIPO	Abs. Only
	AT	WO 93/06216	4/1/93	PCT	
	AU	WO 93/12232	06/24/93	WIPO	Abs. Only
	AV	WO 94/04574	1994	WIPO	Abs. Only
	AW	WO 94/07922	1994	WIPO	Abs. Only
	AX	WO 94/19017	1994	WIPO	Abs. Only
	AY	WO 94/28933	12/22/94	WIPO	Abs. Only
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1	BL	Bourinbaiar et al., "Comparative In Vitro Study of Contraceptive Agents with Anti-HIV Activity:
	BM	Gramicidin, Nonoxynol-9, and Gossypol," Contraception, 49, 131-137 (1994) Bowie et al., "Deciphering the Message in the Protein Sequences: Tolerance to Amino Acid Substitutions,"
		Science, 247, 1306-1310 (1990)
	BN	Boyd, "Strategies for the Identification of New Agents for the Treatment of AIDS: A National Program to Facilitate the Discovery and Preclinical Development of New Drug Candidates for Clinical Evaluation," <u>AIDS Etiology, Diagnosis, Treatment, and Prevention, Second Edition, DeVita et al., eds., J.B. Lippincott Company, 1988, pp. 305-317</u>
	ВО	Boyd et al., "Anti-HIV Michellamines from <i>Ancistrocladus korupensis</i> ," <u>Journal of Medicinal Chemistry</u> , 37(12), 1740-1745 (1994)
	BP	Capon et al., "Designing CD4 Immunoadhesins for AIDS Therapy," Nature, 337, 525-531 (1989)
	BQ	Capon et al., "The CD4-gp120 Interaction and AIDS Pathogenesis," Annu. Rev. Immunol., 9, 649-678 (1991)
	BR	Carone et al., "Renal Tubular Processing of Small Peptide Hormones," The Journal of Laboratory and Clinical Medicine, 100(1), 1-14 (1982)
	BS	Carpenter et al., JAMA, 280(1), 78-86 (1998)
	ВТ	Carter et al., "Structure of Majusculamide C, a Cyclic Depsipeptide from Lyngbya majuscula," J. Org. Chem., 49, 236-241 (1984)
	BU	Chaudhary et al., "Selective Killing of HIV-Infected Cells by Recombinant Human CD4-Pseudomonas Exotoxin Hybrid Protein," Nature, 335, 369-372 (1988)
	BV	Chaudhary et al., "CD4-PE4OA Chimeric Toxin Active Against Human Immunodeficiency Virus (HIV)-Infected Cells," The Human Retroviruses, pp. 379-387 (1991).
	BW	Coffin, John M., "HIV Population Dynamics In Vivo: Implications for Genetic Variation, Pathogenesis, and Therapy," Science, 267, 483-489 (1995)
	BX	Cohen, "High Turnover of HIV in Blood Revealed by New Studies," Science, 267, 179 (1995)
	BY	Cohen et al., JAMA 280(1), 87-88 (1998)
	BZ	Coll et al., "The Application of Vacuum Liquid Chromatograph to the Separation of Terpene Mixtures," Journal of Natural Products, 49(5), 934-936 (1986)
	CA	Davey et al., "Use of Recombinant Soluble CD4 <i>Pseudomonas</i> Exotoxin, a Novel Immunotoxin, for Treatment of Persons Infected with Human Immunodeficiency Virus," <u>Journal of Infectious Diseases</u> , <u>170</u> , 1180-1188 (1994)
	СВ	Davis, "Delivery Systems for Bipharmaceuticals," J. Pharm. Pharmacol., 44(Suppl. 1), 186-190 (1992)
	CC	De Clercq, "Antiviral Agents: Characteristic Activity Spectrum Depending on the Molecular Target with Which They Interact," Advances In Virus Research, 42, 1-55 (1993)
	CD	De Clercq, "Basic Approaches to Anti-Retroviral Treatment," <u>Journal of Acquired Immune Deficiency</u> Syndromes, 4(3), 207-218 (1991)
↓	CE	Deasy et al., in Microencapsulation and Related Processes, Swarbrick J., ed., Marcel Dekker, Inc.: New York, 1984, pp. 1-60



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	CG	Eppstein et al., "Alternative Delivery Systems for Peptides and Proteins as Drugs," <u>CRC Critical Reviews</u> in Therapeutic Drug Carrier Systems, 5(2), 99-139 (1988)
	СН	Faulkner, "Marine Natural Products," Natural Product Reports, pp. 355-394 (1994)
	CI	Frankmölle et al., "Antifungal Cyclic Peptides from the Terrestrial Blue-Green Alga Anabaena laxa," The Journal of Antibiotics, 45(9), 1451-1457 (1992)
	CJ	Freed et al., "The Role of the HIV Envelope Glycoproteins in Cell Fusion and the Pathogenesis of AIDS," Bull. Inst. Pasteur, 88, 73-110 (1990)
	СК	Glombitza et al., in Algal and Cyanobacterial Biotechnology, Cresswell, R.C., et al., eds., 1989, pp. 211-218
	CL	Gulakowski et al., "A Semiautomated Multiparameter Approach for Anti-HIV Drug Screening," <u>Journal of Virological Methods</u> , 33, 87-100 (1991)
	СМ	Gustafson et al., "A Nonpromoting Phorbol from the Samoan Medicinal Plant <i>Homalanthus nutans</i> Inhibits Cell Killing by HIV-1," J. Med. Chem., 35, 1978-1986 (1982)
	CN	Guyden, "Techniques for Gene Cloning and Expression," in Recombinant DNA Technology Concepts and Biomedical Applications, Steinberg et al., eds., Prentice Hall: Englewood Cliffs, NJ, 1993, pp. 81-124 and 150-162
	СО	Husson et al., "Phase 1 Study of Continuous-Infusion Soluble CD4 as a Single Agent and In Combination with Oral Dideoxyinosine Therapy in Children with Symptomatic Human Immunodeficiency Virus Infection," The Journal of Pediatrics, 121(4), 627-633 (1992)
	СР	Kashman et al., "The Calanolides, a Novel HIV-Inhibitory Class of Coumarin Derivatives from the Tropical Rainforest Tree, <i>Calophyllum lanigerum</i> ," <u>Journal of Medicinal Chemistry</u> , <u>35</u> (15), 2735-2743 (1992)
	CQ	Koenig et al., "Selective Infection of Human CD4+ Cells by Simian Immunodeficiency Virus: Productive Infection Associated with Envelope Glycoprotein-Induced Fusion," <u>Proc. Natl. Acad. Sci. USA</u> , <u>86</u> , 2443-2447 (1989)
	CR	Krishnamurthy et al., "Structural Characterization of Toxic Cyclic Peptides from Blue-Green Algae by Tandem Mass Spectrometry," Proc. Natl. Acad. Sci. USA, 86, 770-774 (1989)
	CS	Laemmli, "Cleavage of Structural Proteins During the Assembly of the Head of Bacteriophage T4," Nature, 227, 680-685 (1970)
	СТ	Langner, "Antiviral Effects of Different CD4-Immunoglobulin Constructs Against HIV-1 and SIV: Immunological Characterization, Pharmacokinetic Data and In Vivo Experiments," <u>Arch. Virol.</u> , 130, 157-170 (1993)
	CU	Lin et al., "Selective Inhibition of Human Immunodeficiency Virus Type 1 Replication by the (-) but Not the (+) Enantiomer of Gossypol," Animicrob. Agents Chemother., 33(12), 2149-2151 (1989)
	CV	Lipton, "HIV Displays Its Coat of Arms," Nature, 367, 113-114 (1994)
	CW	Lisi et al., "Enzyme Therapy: I. Polyethylene Glycol:-Glucuronidase Conjugates as Potential Therapeutic Agents in Acid Mucopolysaccharidosis," J. Appl. Biochem., 4, 19-33 (1982)
↓	СХ	Matsushita et al., "Characterization of a Human Immunodeficiency Virus Neutralizing Monoclonal Antibody and Mapping of the Neutralizing Epitope," <u>Journal of Virology</u> , <u>62</u> (6), 2107-2114 (1988)



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LL	СУ	Maulding, "Prolonged Delivery of Peptides by Microcapsules," <u>Journal of Controlled Release</u> , <u>6</u> , 167-176 (1987)
	CZ	McCaffrey et al., "A Rapid Fluorometic DNA Assay for the Measurement of Cell Density and Proliferation In Vitro," In Vitro Cellular & Developmental Biology, 24(3), 247-252 (1988)
	DA	Merigan, "Treatment of AIDS with Combinations of Antiretroviral Agents," The American Journal of Medicine, 90(Supp. 4A), 8S-17S (1991)
	DB	Merson, "Slowing the Spread of HIV: Agenda for the 1990s," Science, 260, 1266-1268 (1993)
	DC	Michalowski et al., "A Novel Allophycocyanin Gene (apcD) from <i>Cyanophora paradoxa</i> Cyanelles," Nucleic Acids Research, 18(8), 2186 (1990)
	DD	Mitsuya et al., "Molecular Targets for AIDS Therapy," Science, 249, 1533-1544 (1990)
	DE	Moore et al., "Sensitive ELISA for the gp120 and gp160 Surface Glycoproteins of HIV-1," AIDS Research and Human Retroviruses, 4(5), 369-379 (1988)
	DF	Moore et al., "Virions of Primary Human Immunodeficiency Virus Type 1 Isolates Resistant to Soluble CD4 (sCD4) Neutralization Differ in sCD4 Binding and Glycoprotein gp120 Retention from sCD4-Sensitive Isolates," Journal of Virology, 66(1), 235-243 (1992)
	DG	Morgan et al., "Further Evaluation of Soluble CD4 as an Anti-HIV Type 1 Gene Therapy: Demonstration of Protection of Primary Human Peripheral Blood Lymphocytes from Infection by HIV Type 1," <u>AIDS</u> Research and Human Retroviruses, 10(11), 1507-1515 (1994)
	DH	Ngo et al., "Computational Complexity, Protein Structure Prediction, and the Levinthal Paradox," <u>The Protein Folding Problem and Tertiary Structure Prediction</u> , Merz et al., eds., Birkhauser, Boston, 492-495 (1994)
	DI	Nicholl, in An Introduction to Genetic Engineering, Cambridge University Press: Cambridge, 1994, pp. 1-6 and 127-130
	DJ	Okino et al., "Microginin, An Angiotensin-Converting Enzyme Inhibitor from the Blue-Green Alga Microcystis aeruginosa," Tetrahedron Letters, 34(3), 501-504 (1993)
	DK	Old et al., in Principles of Gene Manipulation, Blackwell Scientific Publishers: London, 1992, pp. 1-13 and 108-221
İ	DL	Orkin et al., Report and Recommendations of the Panel to Assess the NIH Investment in Research on Gene Therapy (1995)
	DM	Orloff et al., "Increase in Sensitivity to Soluble CD4 by Primary HIV Type 1 Isolates After Passage through C8166 Cells: Association with Sequence Differences in the First Constant (C1) Region of Glycoprotein 120," AIDS Research and Human Retroviruses, 11(3), 335-342 (1995)
	DN	Patterson et al., "Antiviral Activity of Cultured Blue-Green Algae (Cyanophyta)," J. Phycol., 29, 125-130 (1993)
	DO	Patterson et al., "Antineoplastic Activity of Cultured Blue-Green Algae (Cyanophyta)," <u>J. Phycol.</u> , <u>27</u> , 530-536 (1991)
	DP	Patton et al., "(D) Routes of Delivery: Case Studies (2) Pulmonary delivery of Peptides and Proteins for Systemic Action," Advanced Drug Delivery Reviews, 8, 179-196 (1992)
	DQ	Pelletier et al., "Separation of Diterpenoid Alkaloid Mixtures Using Vacuum Liquid Chromatography," Journal of Natural Products, 49(5), 892-900 (1986)
/	DR	Powderly et al., <u>JAMA</u> 280(1), 72-77 (1998)

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	DT	Ramachandran et al., "Failure of Short-Term CD4-PE40 Infusions to Reduce Virus Load in Human Immunodeficiency Virus-Infected Persons," <u>Journal of Infectious Diseases</u> , <u>170</u> , 1009-1013 (1994)
	DU	Rink et al., "Cytoplasmic pH and Free Mg ²⁺ in Lymphocytes," <u>Journal of Cell Biology</u> , <u>95</u> , 189-196 (1982)
	DV	Rogers, "Ferredoxins, Flavodoxins and Related Proteins: Structure, Function and Evolution," The Cyanobacteria, P. Fay et al., eds., Elsevier Science Publishers B.V. (Biomedical Division), 1987, pp. 35-67.
	DW	Royer et al., "Inhibition of Human Immunodeficiency Virus Type 1 Replication by Derivatives of Gossypol," Pharmacol. Res., 24(4), 407-412 (1991).
	DX	Rosenberg et al., "Commentary: Methods Women Can Use That May Prevent Sexually Transmitted Disease, Including HIV," American Journal of Public Health, 82(11), 1473-1478 (1992)
	DY	Rosenberg et al., "Virucides in Prevention of HIV Infection," Sexually Transmitted Diseases, 20(1), 41-44 (1993)
	DZ	Rümbeli et al., "-N-Methylasparagine in Phycobiliproteins from the Cyanobacteria Mastigocladus laminosus and Calothrix," FEBS Letters, 221(1), 1-2 (1987)
	EA	Samenen et al., "Polypetides As Drugs," <u>in Polymeric Materials in Medication</u> , Gebelein et al., eds., Plenum Press: New York, 1985, pp. 227-247
	ЕВ	Sanders, "Drug Delivery Systems and Routes of Administration of Peptide and Protein Drugs," <u>Eur. J.</u> Drug Metab. Pharmacokinet., 15(2), 95-102 (1990)
	EC	Sattentau et al., "The Human and Simian Immunodeficiency Viruses HIV-1, HIV-2 and SIV Interact with Similar Epitopes on Their Cellular Receptor, the CD4 Molecule," <u>AIDS</u> , <u>2</u> (2), 101-105 (1988)
	ED	Schooley et al., "Recombinant Soluble CD4 Therapy in Patients with the Acquired Immunodeficiency Syndrome (AIDS) and AIDS-Related Complex," Annals of Internal Medicine, 112(4), 247-253 (1990)
	EE	Schrager et al., JAMA 280(1), 67-71 (1998)
1	EF	Sherman et al., "The Protein Composition of the Photosynthetic Complexes from the Cyanobacterial Thylakoid Membrane," The Cyanobacteria, P. Fay et al., eds., Elsevier Science Publishers B.V. (Biomedical Division), 1987, pp. 1-33



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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

APPLICANT Michael R. Boyd

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LL	EV	Weislow et al., "New Soluble-Formazan Assay for HIV-1 Cytopathic Effects: Application to High-Flux Screening of Synthetic and Natural Products for AIDS-Antiviral Activity," <u>Journal of the National Cancer Institute</u> , <u>81</u> (8), 577-586 (1989)
	EW	White et al., "A TIBO Derivative, R82913, Is a Potent Inhibitor of HIV-1 Reverse Transcriptase with Heteropolymer Templates," Antiviral Research, 16, 257-266 (1991)
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	EY	Wunsch, E., "Peptide Factors as Pharmaceuticals: Criteria for Application," <u>Biopolymers</u> , <u>22</u> , 493-505 (1983)
	EZ	Agnew et al., "The Effect of Treatment Regimens for Vaginitis and Cervicitis on Vaginal Colonization by Lactobacilli," Sexually Transmitted Diseases, 22 (5), 269-273 (1995).
	FA	Andreu et al., "Hemagglutination, Adherence, and Surface Properties of Vaginal Lactobacillus Species," Infect. Diseases, 171, 1237-1243 (1995).
	FB	Boyd et al., "Discovery of Cyanovirin-N, a Novel Human Immunodeficiency Virus-Inactivating Protein That Binds Viral Surface Envelope Glycoprotein gp120: Potential Applications to Microbicide Development", Antimicrobial Agents and Chemotherapy, 41(7), 1521-1530 (1997)
	FC	Bruce et al., "Intravaginal instillation of Lactobacilli for Prevention of Recurrent Urinary Tract Infections Can. J. Microbiol., 34, 339-343 (1988).
	FD	Buckheit et al., "Biological and Biochemical Anti-HIV Activity of the Benzothiadiazine Class Nonnucleoside Reverse Transcriptase Inhibitors," Antiviral Research, 25, 43-56 (1994).
	FE	Chan et al., "HIV Entry and its Inhibition," Cell, 93, 681-684 (1998)
	FF	Davis, et al., "Reduction of Immunogenicity and Extension of Circulating Half-Life of Peptides and Proteins," Peptide and Protein and Drug Delivery, Marcel Dekker, Inc., New York: 1991 (831-864)
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	FH	Elmer et al., "Biotherapeutic Agents," <u>JAMA</u> , <u>275</u> (11), 870-876 (1996).
	FI	Goudswaard et al., "Protein A Reactivity of Various Mammalian Immunoglobulins," Scand. J. Immuno 8, 21-28 (1978).
	FJ	Greenspan et al., "Idiotypes: Structure and Immunogenicity," The FASEB Journal, 7, 437-444 (1993)
	FK	Harris, "Introduction to Biotechnical and Biomedical Applications of Poly(Ethylene Glycol)", Poly(Ethylene Glycol) Chemistry: Biotechnical and Biomedical Applications, Plenum Press, New York: 1992 (1-14)
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	FM	Hillier et al., "The Normal Vaginal Flora, H ₂ O ₂ -Producing Lactobacilli, and Bacterial Vaginosis Pregnant Women," Clinical Infectious Diseases, 16, S273-S281 (1993).
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	FP	Hols et al., "Use of Homologous Expression-Secretion Signals and Vector-Free Stable Chromosomal Integration in Engineering of Lactobacillus Plantarum for α-Amylase and Levanase Expression," Applied and Environmental Microbiology, 60(5), 1401-1413 (1994).
	FQ	Krietman et al., "Recombinant Immunotoxins Containing Anti-Tac(FV) and Derivatives of Pseudomonas Exotoxin Produce Compete Regression in Mice of an Interleukin-2 Receptor-Expressing Human Carcinoma," Blood, 83(2), 426-434 (1994).
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	FW	Poskitt et al., "Internal Image (AB2ß) Anti-Idiotype Vaccinces," Theoretical and Practical Aspects," Vaccine, 9, 792-796 (1991).
	FX	Redondo-Lopez et al., "Emerging Role of Lactobacilli in the Control and Maintenance of the Vaginal Bacterial Microflora," Reviews of Infectious Diseases, 12(5), 856-872 (1990).
	FY	Reid et al., "Is There a Role for Lactobacilli in Prevention of Urogenital and Intestinal Infections?," Clinical Microbiology Reviews, 3(4), 335-344 (1990).
	FZ	Schulz et al., Principles of Protein Structure, Springer-Verlag, New York, 14-16 (1979).
	GA	Vaughan et al., "Human Antibodies by Design," Nature Biotechnology, 16, 535-539 (1998).
	GB	Walker, "NIAID Expands Research on Topical Microbicides to Prevent STDs in Women," NIAID News, (Press Release), (April 27, 1995).
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